REMARKS

Claims 1-30 were submitted for reconsideration and reexamination and, in the aforementioned Office action, claims 1-30 were rejected as unpatentable under 35 U.S.C.§103(a) over Burch et al. (US 5,680,422) in view of Nah et al. (US 6,031,886), and in further view of Gaudet (US 6,285,726). By this amendment, independent claims 1 and 16 have been further amended to distinguish the invention more clearly over the cited art, and are presented for reconsideration in light of the following remarks.

As indicated in the description and claims of the application, the present invention pertains to a communication system for transporting a plurality of sampled signals over a communication link that is asynchronous. That is to say, the communication channel 32 (FIG.1) and the communication channel 232 (FIG. 3) are asynchronous channels that do not carry clock signals in the usual sense of that term, but only data, and clock phase estimates encoded as data.

In a synchronous channel, data transmission proceeds at a fixed rate and the receiver and transmitter must be synchronized to work together at the fixed rate. The term "asynchronous" as applied to a communication channel may have slightly different meanings depending on the specific context. As applied to simple modems that handle one data character or byte at a time, the asynchronous mode is one in which the sending and receiving ends "know" where a character begins and ends because each byte is framed to include both the character itself and additional bits, called a start bit and a stop bit. An asynchronous channel may also be used to transport data encoded into packets of a prearranged format, as in the well known asynchronous transport mode (ATM). Regardless of the specific form of an asynchronous communication

channel, it is always characterized by the absence of synchronization between the sending and receiving ends.

The Burch system discloses the transmission of data over a synchronized channel. See FIG. 1 (20, 207), FIG. 2 (24, 25, 27, 28, 29, 31, 32), FIG. 3 (62), FIG. 4 (81), FIG. 5 (81), FIG. 6 (62) and FIG. 7 (151). The Examiner refers to the abstract as support for the assertion that Burch discloses an asynchronous communication channel, but the abstract uses the word "asynchronous" only to refer to the incoming signal, not to the communication channel, which is characterized throughout the patent as a "synchronous digital data communication channel" (emphasis added). The Burch system takes "unsynchronized" input signals and processes them in a synchronizer and multiplexer to produce synchronized signals for transmission over the synchronous communication channel. This overall function of the Burch system is readily apparent from Burch's FIGS. 1-5. In FIG. 6, a novel form of a synchronizer-multiplexer is disclosed, for use in the same configurations shown in FIGS. 1 and 2. In the synchronizer-multiplexer, Burch uses stuffing pulses and an "elastic store" to produce an output data stream that is synchronized for the synchronous communication channel. At the receiving end, the stuffing pulses are removed and a "desynchronized" data stream is generated.

In brief, there is simply no disclosure or suggestion (in Burch) of an asynchronous communication channel. On the contrary, what is disclosed throughout is a synchronous communication channel. Applicant's position is that on this basis alone, Burch is not pertinent to the present invention as claimed.

Claims 1 and 16 are further distinguished from Burch by their recitation of a resample filter and a resample filtering step, respectively. The Examiner recognizes that the Burch patent does not teach the claimed resample filter at the receiving location, but asserts that Gaudet's disclosure of a delay interpolator (136) and phase selector (!40) is "functionally equivalent" to the claimed resample filter. Gaudet discloses a clock recovery architecture for recovering clock and serial data from an incoming data stream of a local area network. Applicant concedes only that the structure of the resample filter as implemented (a FIR filter) is well known, but cannot agree that the Gaudet disclosure renders obvious the resample filter claim 1, or renders obvious the resample filtering step in claim 16.

The Gaudet patent pertains to clock recovery techniques and none of the cited patents contains any incentive to combine the teachings of Gaudet with those of Burch. Even if such a combination were to be suggested, however, the result would not be the claimed invention because Burch does not teach or suggest the use of an asynchronous communication channel.

The present invention provides a technique for transporting sampled data between locations over an asynchronous communication channel but without the significant overhead that would be required to transmit sampling clock information with the sampled data. Instead, the invention transmits the data, with phase estimates encoded as data, over an asynchronous channel, and uses the recovered phase estimates to control a resample filter at the receiving end. The resampled data at the receiving end is generated with a fidelity approaching that of the original sampled data, but without the cost of having to operate a synchronous channel. It is believed that the

combination of cited art does not teach or render obvious this inventive concept. Claims 1 and 16 have been further amended in an effort to distinguish the invention over the cited art.

Applicant has conceded that Nah discloses generation of multiple phase clocks, although in a context of digital phase alignment apparatus, which seems to be unrelated to the asynchronous communication technique of the present invention.

Because this amendment is believed to place independent claims 1 and 16 in condition for allowance over the cited art, the dependent claims are also believed to be allowable with the claims from which they depend.

In summary, Applicant respectfully urges the Examiner to reconsider the applicability of the cited references in view of the foregoing remarks and amendments.

In view of the foregoing remarks, Applicant respectfully requests reconsideration and allowance of claims 1-30.

Respectfully submitted,

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